

Work Order ID 87195

\*87195\*

Page 1

July-11-12 10:07:18 AM

Item ID: D350-604-041

Accept

\*N900040100\*

Setup Start \*NS1\*

Revision ID:

Stop \*NS2\*

Item Name: Rear Locker Extender

Start Date: 7/16/12 Start Qty: 1.00

\*1\*

Cust Item ID:

Required Date: 8/24/12 Req'd Qty: 1.00

\*1\*

Customer:

Reference:

Approvals: Process Plan: W Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Run Start \*NR1\*

QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Stop \*NR2\*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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Draw Nbr	Revision Nbr
D2273	F
D350-604-041	B

100

0.00

\*100\*

DOCUMENT CONTROL

DC

Memo

0.00

Document Control

Photocopy bluefile and create labels per PPP D350-604-041

CHG003 for D2273 rev.E (new gelcoat)

CHG004 for D2273 rev.F (new primer)

110

0.00

\*110\*

PURCHASING

Purchasing

Memo

0.00

Purchasing

Issue P/O: 17520

Description: D350-604-041 Rear locker extender.

Supplier: Delastek.

Certification of Conformity and process sheet from Delastek is required.

4 x 2600-6 Camlock stud - Ship to Delastek B \_\_\_\_\_

4 x 2600-LW Retaining washers - Ship to Delastek B \_\_\_\_\_

*Handwritten:* DAS 12/4/30

*Handwritten:* M25 12/07/30

*Handwritten:* W 12-07-27

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

# Work Order ID 87195

**\*87195\***

Page 2

July-11-12 10:07:18 AM

Item ID: D350-604-041

Accept

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Setup Start **\*NS1\***

Revision ID:

Stop **\*NS2\***

Item Name: Rear Locker Extender

Start Date: 7/16/12 Start Qty: 1.00

**\*1\***

Cust Item ID:

Required Date: 8/24/12 Req'd Qty: 1.00

**\*1\***

Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Run Start **\*NR1\***

QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Stop **\*NR2\***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
120	Receive & Inspect for Damage & Mat'l Certs	0.00							
<b>*120*</b>	Packaging								
Packaging	Memo	0.00							
Packaging	Ensure a copy of Certification of Conformity and process sheet from Delastek is attached.								
130	QC5- Inspect part completeness to step on W/O	0.00							
<b>*130*</b>									
QC	Memo	0.00							
Quality Control	Check hole locations to template. DT 8824 Check process sheet and audit.								
140		0.00							
<b>*140*</b>									
Small Fab	Memo	0.00							
Small Fab	INSTALL DECALS AS PER DWG								

SAND & BUFF FLANGE SURFACE

① M/12.07.26

Ohc  
12/07/12

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

# Work Order ID 87195

**\*87195\***

Page 3

July-11-12 10:07:18 AM

Item ID: D350-604-041 Accept **\*N900040100\*** Setup Start **\*NS1\***  
 Revision ID: Stop **\*NS2\***  
 Item Name: Rear Locker Extender  
 Start Date: 7/16/12 Start Qty: 1.00 **\*1\*** Cust Item ID:  
 Required Date: 8/24/12 Req'd Qty: 1.00 **\*1\*** Customer:  
 Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_ Run Start **\*NR1\***  
 QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_ Stop **\*NR2\***

Sequence ID/ Work Center ID	Operation Description:	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
150	QC5- Inspect part completeness to step on W/O	0.00							
<b>*150*</b>									
QC	Memo	0.00							
Quality Control									
160		0.00							
<b>*160*</b>	Packaging								
Packaging	Memo	0.00							
Packaging	Identify and pack for shipping as per PPP D350-604-041								
	Location: _____								
	PPP Rev: _____								
170	QC21- Final Inspection - Work Order Release	0.00							
<b>*170*</b>									
QC	Memo	0.00							
Quality Control									

12/7/30  
 MJS 12/07/30  
 MJS 12/07/30

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

# Picklist Print

July-11-12 10:07:17 AM

Page 1

Work Order ID: 87195

Parent Item: D350-604-041

Parent Item Name: Rear Locker Extender

Start Date: 7/16/12

Required Date: 8/24/12

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP Rev:Q03.12.01ReformatKJ/RF IPP REV:R 12.02.07 AS PER ECN12-  
521 DD verf:JLM IPP REV:S 12.04.04 AS PER DWG REV.B DD VERF:EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
2600-6 Camlock Stud		Purchased	No			110	Each	199.0000	4	4		12/07/27	
				<u>Location</u>		<u>Loc Qty</u>		<u>Loc Code</u>					
				ST380		199							
				120077		8							
				121556		4							
				122317		42							
				122335		145							
2600-LW Camloc Retaining Washer		Purchased	No			110	Each	319.0000	4	4		12/07/27	
				<u>Location</u>		<u>Loc Qty</u>		<u>Loc Code</u>					
				ST380		316							
				121524		116							
				122317		200							
				ST381		1							
				121287		1							
				ST398		2							
				120648		2							
D2268 Decal		Manufactured	No			140	Each	31.0000	1	1		12/2/30	
				<u>Location</u>		<u>Loc Qty</u>		<u>Loc Code</u>					
				ST007		20							
				80010		20							
				ST009		11							
				69592		2							
				78908		9							

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries



# Picklist Print

July-11-12 10:07:17 AM

Page 2

Work Order ID: 87195

Parent Item: D350-604-041

Parent Item Name: Rear Locker Extender

Start Date: 7/16/12

Required Date: 8/24/12

Start Qty: 1.00

Required Qty: 1.00

D2269 Manufactured No Each 25.0000  
Decal

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
ST007	20	
80011	20	
ST009	5	
78920	5	

D350-604-041P Purchased No 110 Each 0.0000  
Rear Locker Extender

1

1

July-11-12 10:07:17 AM

Shop Packet Print

Page 2

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

\*\*\*\*Certificate of Conformity\*\*\*\*

**Customer:**

Dart Aerospace

**Purchase Order #:**

no PO provided

**Packing Slip #:**

**Part #:**

DKC134-0081

**Serial #:**

Prototype

**Description:**

Stoath spec 2 ply flange locker

**Quantity:**

1

**Certification:**

We hereby certify that:

1. The above the listed items were manufactured, repaired and/or inspected in accordance with applicable drawings and/or specifications;
2. All work was accomplished in accordance with the Dart Aerospace Purchase Order;
3. Results of all inspections, chemical or physical tests, as well as other evidence, which shows the acceptability of raw materials, parts and/or assembly components are on file and available for inspection at any time.

**Authority:**

**APPROVAL:**

**Signature:**

*John E. V...*

**DATE:**

7/20/2012

**Title: President**

NCR: Yes / No

**WORK ORDER NON-CONFORMANCE / UPDATE**

DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order: _____  Part No. _____  NCR No. _____				<b>DISPOSITION</b>  Rework <input type="checkbox"/> Scrap <input type="checkbox"/> Use-as-is <input type="checkbox"/> Work Order Update <input type="checkbox"/>		<b>AGAINST DEPARTMENT/PROCESS</b>  <div style="display: flex; justify-content: space-between;"> <div>           Skid-tube <input type="checkbox"/>            Machining <input type="checkbox"/>            Thermoforming <input type="checkbox"/>            Large Fab <input type="checkbox"/> </div> <div>           Crosstube <input type="checkbox"/>            Small Fab <input type="checkbox"/>            Finishing <input type="checkbox"/>            Composite <input type="checkbox"/> </div> <div>           Water Jet <input type="checkbox"/>            Prod. Eng. Coord. <input type="checkbox"/>            Rec/Store/Packaging <input type="checkbox"/>            Supplier <input type="checkbox"/> </div> <div>           Engineering <input type="checkbox"/>            Quality <input type="checkbox"/>            Other <input type="checkbox"/> </div> </div>					
<b>Root Cause</b>	Date	Step	Qty	Description of work order update or Non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector		
Doc/Data <input type="checkbox"/>											
Equip/Tooling <input type="checkbox"/>											
Operator <input type="checkbox"/>											
Material <input type="checkbox"/>											
Setup <input type="checkbox"/>											
Other <input type="checkbox"/>											
Process <input type="checkbox"/>											
Supplier <input type="checkbox"/>											
Training <input type="checkbox"/>											
Unapproved <input type="checkbox"/>											
<b>FAULT CATEGORY</b>											
<b>Landing Gear</b> <input type="checkbox"/> Bending <input type="checkbox"/> Centre Not Concentric to O/S <input type="checkbox"/> Cracks <input type="checkbox"/> Crushed/Crimped <input type="checkbox"/> Cuffs <input type="checkbox"/> Heat Treat <input type="checkbox"/> Inspection Strip in Tube <input type="checkbox"/> Ripples in Bend <input type="checkbox"/> Torque Waves in Extrusion <input type="checkbox"/> Turning Sequence <input type="checkbox"/> Wave/Twist in Tube			<b>General</b> <input type="checkbox"/> Bend <input type="checkbox"/> BOM/Route <input type="checkbox"/> Broken/Damaged <input type="checkbox"/> Burrs <input type="checkbox"/> Contamination <input type="checkbox"/> Countersink <input type="checkbox"/> Cut Too Short <input type="checkbox"/> Drill Holes <input type="checkbox"/> Drawing <input type="checkbox"/> Finish <input type="checkbox"/> Folio			<input type="checkbox"/> Grain <input type="checkbox"/> Hardware <input type="checkbox"/> Inspection Incomplete <input type="checkbox"/> Instructions Incomplete/Unclear <input type="checkbox"/> Maintenance <input type="checkbox"/> Mislabeled <input type="checkbox"/> Misread <input type="checkbox"/> Offset <input type="checkbox"/> Out of Calibration <input type="checkbox"/> Out of Sequence <input type="checkbox"/> Outside Dimensions			<input type="checkbox"/> Ovalized <input type="checkbox"/> Over/Under tolerance <input type="checkbox"/> Part Incorrect <input type="checkbox"/> Part Lost/Missing <input type="checkbox"/> Part Moved <input type="checkbox"/> Positioned Wrong <input type="checkbox"/> Power Loss/Surge  <input type="checkbox"/> Pressure/Forced <input type="checkbox"/> Temperature/Cure <input type="checkbox"/> Weld <input type="checkbox"/> Wrong Stock Pulled <input type="checkbox"/> Other		

Stealth Composites Inc.

## Process Data Sheet

Date: 07/16/12  
Client: DART  
Job: Prototype  
Comments: Stealth spec locker 2 ply flange

Part Name: Stealth spec extended locker  
Part Number: prototype  
Revision: n/a  
Material: fiberglass/FR polyester resin  
Quantity: 1

Resin: Hetron FR 650 T-20  
Gelcoat: G730AA1100  
Catalyst: Cadox M-50A  
Fiber: 1.5 oz random fiberglass mat

Batch: 0001291211  
Batch: G31  
Batch: 12041F0701

	Operation	Date	Initial
Setup:	n/a		
Mold Prep:	clean with dry cloth	7/17	JAD
Material prep:	Cut fiberglass to fit mold	7/17	JAD
Mix gelcoat:	Catalyze gelcoat @1.5% Cadox	7/18	JAD
Apply gelcoat:	Spray mixed gelcoat onto mold	7/18	JAD
Mix resin:	Catalyze resin @1.5% Cadox	7/18	JAD
Apply Fibers:	apply cut fiberglass mat to mold	7/18	JAD
Apply Resin:	Saturate fibers with resin	7/18	JAD
Cure time:	24 hrs		
Demold:	remove locker from mold	7/19	JAD
Trim:	cut and sand flange per drawing	7/19	JAD
Drill holes:	4 holes drilled per drawing	7/19	JAD

NCR: Yes / No

**WORK ORDER NON-CONFORMANCE / UPDATE**

DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order: _____  Part No. _____  NCR No. _____				<b>DISPOSITION</b>  Rework <input type="checkbox"/> Scrap <input type="checkbox"/> Use-as-is <input type="checkbox"/> Work Order Update <input type="checkbox"/>		<b>AGAINST DEPARTMENT/PROCESS</b>  <div style="display: flex; justify-content: space-between;"> <div>           Skid-tube <input type="checkbox"/>            Machining <input type="checkbox"/>            Thermoforming <input type="checkbox"/>            Large Fab <input type="checkbox"/> </div> <div>           Crosstube <input type="checkbox"/>            Small Fab <input type="checkbox"/>            Finishing <input type="checkbox"/>            Composite <input type="checkbox"/> </div> <div>           Water Jet <input type="checkbox"/>            Prod. Eng. Coord. <input type="checkbox"/>            Rec/Store/Packaging <input type="checkbox"/>            Supplier <input type="checkbox"/> </div> <div>           Engineering <input type="checkbox"/>            Quality <input type="checkbox"/>            Other <input type="checkbox"/> </div> </div>					
<b>Root Cause</b>	Date	Step	Qty	Description of work order update or Non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector		
Doc/Data <input type="checkbox"/>											
Equip/Tooling <input type="checkbox"/>											
Operator <input type="checkbox"/>											
Material <input type="checkbox"/>											
Setup <input type="checkbox"/>											
Other <input type="checkbox"/>											
Process <input type="checkbox"/>											
Supplier <input type="checkbox"/>											
Training <input type="checkbox"/>											
Unapproved <input type="checkbox"/>											

FAULT CATEGORY				
<b>Landing Gear</b> <input type="checkbox"/> Bending <input type="checkbox"/> Centre Not Concentric to O/S <input type="checkbox"/> Cracks <input type="checkbox"/> Crushed/Crimped. <input type="checkbox"/> Cuffs <input type="checkbox"/> Heat Treat <input type="checkbox"/> Inspection Strip in Tube <input type="checkbox"/> Ripples in Bend <input type="checkbox"/> Torque Waves in Extrusion <input type="checkbox"/> Turning Sequence <input type="checkbox"/> Wave/Twist in Tube	<b>General</b> <input type="checkbox"/> Bend <input type="checkbox"/> BOM/Route <input type="checkbox"/> Broken/Damaged <input type="checkbox"/> Burrs <input type="checkbox"/> Contamination <input type="checkbox"/> Countersink <input type="checkbox"/> Cut Too Short <input type="checkbox"/> Drill Holes <input type="checkbox"/> Drawing <input type="checkbox"/> Finish <input type="checkbox"/> Folio	<input type="checkbox"/> Grain <input type="checkbox"/> Hardware <input type="checkbox"/> Inspection Incomplete <input type="checkbox"/> Instructions Incomplete/Unclear <input type="checkbox"/> Maintenance <input type="checkbox"/> Mislabeled <input type="checkbox"/> Misread <input type="checkbox"/> Offset <input type="checkbox"/> Out of Calibration <input type="checkbox"/> Out of Sequence <input type="checkbox"/> Outside Dimensions	<input type="checkbox"/> Ovalized <input type="checkbox"/> Over/Under tolerance <input type="checkbox"/> Part Incorrect <input type="checkbox"/> Part Lost/Missing <input type="checkbox"/> Part Moved <input type="checkbox"/> Positioned Wrong <input type="checkbox"/> Power Loss/Surge	<input type="checkbox"/> Pressure/Forced <input type="checkbox"/> Temperature/Cure <input type="checkbox"/> Weld <input type="checkbox"/> Wrong Stock Pulled <input type="checkbox"/> Other



Dart Aerospace Ltd.  
1270 Aberdeen Street  
Hawkesbury, ON K6A 1K7  
Tel: 613 632 9577  
Fax: 613 632 1053

## PURCHASE ORDER

Purchase Order ID **PO17520**

Purchase Order Date 7/23/12

PO Print Date 7/23/12

Page Number 1 of 1

Order From :

VU-STE002

STEALTH COMPOSITIES INC.  
3 NORTH COLUMBUS BLVD.  
PHILADELPHIA, PHILADELPHIA PA 19106  
USA

Contact Name

Vendor Phone

215-919-7584

Vendor Fax

215-689-4979

Vendor Account Nbr

Buyer

Linda Lacelle

Requisition Nbr

10127-2607

Tax Resale Nbr

Terms

Net 10

Currency

USD

FOB

Destination-Collect

Ship To :

DART AEROSPACE LTD

1270 ABERDEEN  
HAWKESBURY, ON K6A 1K7  
CANADA

Line Nbr	Reference Revision ID Vendor Part Number	Description/ Mfg ID	Req Date/ Taxable	Req Qty/ Unit of Measure	Ship Method	Unit Price	Extended Price
1	D350-604-041P	Rear Locker Extender	7/23/12 Yes	1.00 Each	/	\$750.0000	\$750.00

*1612/12P3* Total:

\$750.00

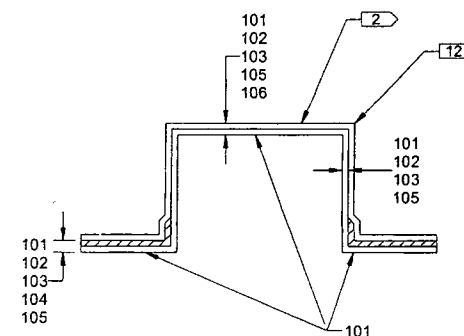
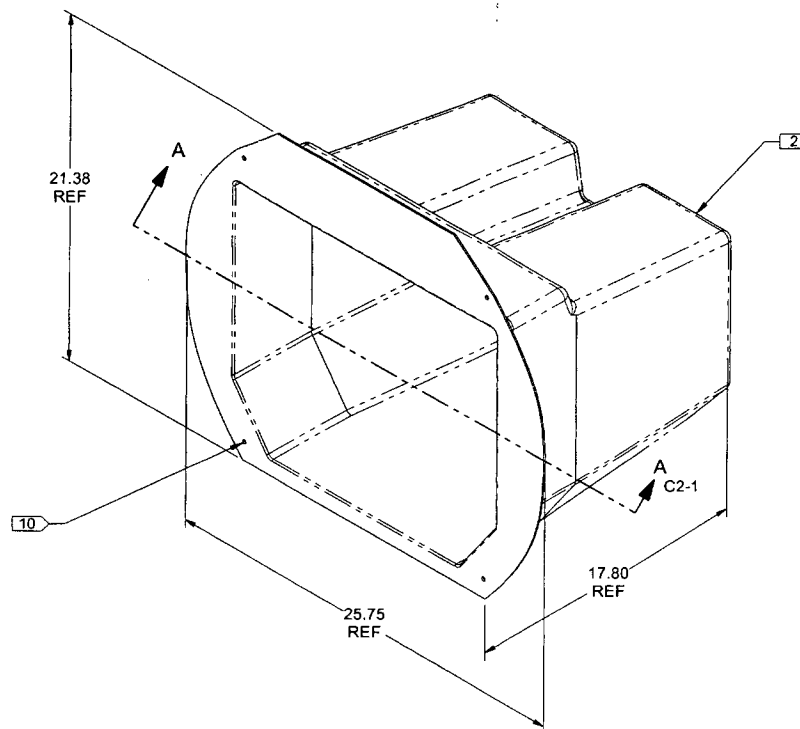
Change Nbr: 1

Change Date: 7/23/12

No substitution or deviation without  
consent.  
Certificate of Conformity or Material  
Certification required - YES NO







SECTION A-A  
C4-1

RELEASED  
2012-03-29

NOTES:

1) MATERIALS:

RESIN: DERAKANE 470-36/411/510A40  
FIBRE: 9 oz = 9.7 oz 7781 WEAVE "S" GLASS  
18 oz = 18.0 oz ROVING "E" GLASS

2) FINISH: FINISH THIS SURFACE WITH DUPONT GREY PRIMER LE 3404-S/LE 1175-S  $\Delta$

3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED

4) UNITS: INCHES UNLESS OTHERWISE NOTED

5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX

6) IDENTIFICATION: IDENTIFY PER QSI 044 6.1

7) WEIGHT: 7.75 lbs

8) LAMINATE PER DART QSI 006. LAMINATION SCHEDULE PER THIS DRAWING.

9) LAYUP USING DT8010 MOLD. WET LAYUP NO BAG/VACUUM

10) TRIM & DRILL PER DT8020. OPEN HOLES TO  $\varnothing$ 0.257 (4 PLACES)

11) CONSTRUCTION:

101-WHITE GLOSS GELCOAT # GEL 2330PAWK745 TO MIN THICKNESS OF 0.020

102-9 oz ALL OVER

103-18 oz ALL OVER

104-18 oz REINFORCE FRONT FLANGE EXTENDING 2" ON SIDES

105-9 oz ALL OVER

106-PEEL PLY

12) MATTE TO HOLD DOWN CORNERS AS REQUIRED

**D2273 REAR LOCKER EXTENDER**

F	PRIMER LE 3404-S/LE 1175-S WAS 1144-S, ZN A6-1	DC	12.02.27
E	CHANGED SURFACE FINISH FROM 944W005 GELCOAT TO 2330PAWK745 GELCOAT, ZN A7-1. UPDATED DWG TO CURRENT STANDARDS.	DC	12.02.02
D	REMOVE EPOCAST, ADD SURFACE FINISH	CP	02.04.01
C	CLARIFY MATERIAL, LAYUP, AND TOOLING	RF	02.01.30
B	RE-DRAWN	MM	96.05.27
REV.	DESCRIPTION	BY	DATE
DESIGN	JB	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	BC		
CHECKED	BC	DRAWING NO.	REV. F
MFG. APPR.	BC	D2273	SHEET 1 OF 1
APPROVED	MA	TITLE	SCALE
DE APPR.		350 REAR LOCKER EXTENDER	NTS
DATE	12.02.27	COPYRIGHT © 1996 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	

## Ashland launches Hetron™ FR 650T-20, a new high-strength fire retardant resin

02/10/2012

DUBLIN, Ohio – In response to the need for a versatile, high-performance fire retardant polyester resin, Ashland Performance Materials, a commercial unit of Ashland Inc. (NYSE: ASH), has developed Hetron FR 650T-20 resin. This new high-strength resin is a low-viscosity, promoted, thixotropic polyester with exceptional fire retardant properties.

"Ashland recognized the need to move away from some more volatile fire retardant ingredients and developed a new cost-effective chemistry that will better serve the needs of the market," said Thom Johnson, Fire Retardant Composite industry manager, Ashland Performance Materials. He also added that "properly fabricated laminates made with Hetron FR 650T-20 resin can achieve Class I flame spread rating in ASTM E-84 testing without the use of antimony synergists."

Hetron FR 650T-20 is ideally suited for hand lay-up, spray-up and filament-winding applications. It exhibits excellent wet out properties and low drainage when applied to vertical surfaces. Its flame retardant properties make it especially attractive for use in mass transit, architectural, electrical and ducting applications.

To learn more about the new Hetron FR 650T-20, please visit Ashland at booth No. 1153 at the upcoming Composites 2012 show in Las Vegas, Nev., Feb. 21-23, 2012. Or, contact your Ashland representative directly to learn more about the product.

Ashland Performance Materials is the global leader in unsaturated polyester resins and vinyl ester resins. In addition, it provides customers with leading technologies in gelcoats, pressure-sensitive and structural adhesives, coatings and elastomers.

In more than 100 countries, the people of Ashland Inc. (NYSE: ASH) provide the specialty chemicals, technologies and insights to help customers create new and improved products for today and sustainable solutions for tomorrow. Our chemistry is at work every day in a wide variety of markets and applications, including architectural coatings, automotive, construction, energy, food and beverage, personal care, pharmaceutical, tissue and towel, and water treatment. Visit [www.ashland.com](http://www.ashland.com) to see the innovations we offer through our four commercial units—Ashland Specialty Ingredients, Ashland Water Technologies, Ashland Performance Materials and Ashland Consumer Markets.

– 0 –

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### FOR FURTHER INFORMATION:

Media Relations

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## Vibrin<sup>®</sup> G730AA Polyester Gelcoat

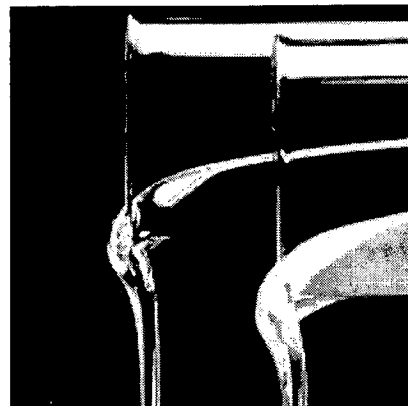
### Product Information

## Vibrin<sup>®</sup> Polyester Gelcoat for Fire Retardant Spray Applications

#### TYPICAL LIQUID RESIN PROPERTIES\* (1) see back page

	Typical Range
Viscosity @ 77°F/25°C, RVF Brookfield Spindle #4 @ 20 RPM, cps.	4500-6000
Thix ratio (2:20 RPM)	6.5-8.5
Gel Time @ 77°F/25°C (1.5% MEKP), minutes	8-11
Exotherm Time, minutes	5-15
Exotherm Temperature, °C	160-190
HAP Content, %	35-45

\*Typical properties are not to be construed as specifications.



#### DESCRIPTION

AOC's Vibrin<sup>®</sup> G730AA is a fully promoted, thixotropic, fire retardant, polyester gelcoat for spray applications. Consult the Colour Selection Guide for examples of colours available.

#### FEATURES

- Formulated to surpass UL94 V-0 Flame Testing
- High halogen content
- Good processability
- Fast cure

#### APPLICATIONS

AOC's Vibrin<sup>®</sup> G730AA is designed to be used in fire retardant applications. It must be used in conjunction with a suitable fire retardant laminating resin in order for the entire composite to give fire retardant properties. This product has moderate weathering characteristics and is not suited for applications where UV resistance is required.

# Vibrin® G730AA Polyester Gelcoat

## APPLICATION GUIDELINES

A. All AOC thixotropic polyester gelcoats should be mixed well prior to use.

B. MEKP levels should be kept between 1.0% and 2.5%.

C. Gelcoat should not be applied at temperatures below 64°F/18°C.

D. Recommend spraying 3 passes at 5-8 mils allowing a short flash time between passes.

## MINIMUM STORAGE

### STABILITY

AOC's G730AA gelcoat is stable for three months from date of production when stored away from sunlight at no more than 77°F/25°C. Storage at elevated temperatures will reduce shelf life. After extended storage, some drift may occur in gel time or viscosity.

## SAFETY

See appropriate Material Safety Data Sheet for guidelines.

## ISO 9002 CERTIFIED

The Quality Management Systems at every AOC manufacturing facility have been certified as meeting ISO 9002 standards. This certification recognizes that each AOC facility has an internationally accepted model in place for managing and assuring quality. We follow the practices set forth in this model to add value to the resins we make for our customers.

## FOOTNOTES

### (1)

Gel times shown are typical but may be affected by catalyst type and level, and by gelcoat, mold and shop temperature. Variations in curing characteristics can be expected between different lots of catalysts and at extremely high humidities. It is recommended that the fabricator check the curing characteristics of a small quantity of gelcoat under actual operating conditions prior to use.



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Our recommendations should not be taken as inducements to infringe any patent or violate any law, safety code or insurance regulation.